

Wheat Leaf Rust Resistance Genes: Source, Genome Location, Low Infection Type and Tester Lines
 (Also see Chromosomal Location and Linkage and Allelism pages)

Lr gene	Origin	Genome location	Linkage	Tester source	Low infection type			Remarks	Gene references
					Seedling	Adult	Tester line		
1	Common Wheat	5DL		Centenario	0;	I	RL6003		Dyck, P. L and Samborski, D. J. 1968. Can. J. Genet. and Cytol. 10: 7-17
2a	Common Wheat	2DS		Webster	0; ;1	I,MR	RL6016		Dyck, P. L., and Samborski, D. J. 1974. Can. J. Genet. and Cytol. 16: 323-332.
2b	Common Wheat	2DS		Carina	;1;-1+	R,MR	RL6019		Dyck, P. L., and Samborski, D. J. 1974. Can. J. Genet. and Cytol. 16: 323-332.
2c	Common Wheat	2DS		Brevit	;IN-23	MR-R	RL 6047		Dyck, P. L. and Samborski, D. J. 1968. Can. J. Genet. and Cytol. 10: 7-17
3a	Common Wheat	6BL	Sr11	Democrat	;C-23	R,MR	RL6002		Haggag, M. E. and Dyck, P. L. 1973. Can. J. Genet. and Cytol. 15:127-134.
3bg	Common Wheat	6BL	Sr11	Bage	;C-23	MR-MS	RL 6042		Haggag, M. E. and Dyck, P. L. 1973. Can. J. Genet. and Cytol. 15:127-134.
3ka	Common Wheat	6BL	Sr11	Klein Aniversario	;C-12C	MR-MS	RL6007		Sears, E. R. 1956. Brookhaven Symposium in Biology 9: 1-22.
9	Aegilops umbellulata	6BL		Transfer	0; ;1	I	RL6010		Dyck, P. L. and Kerber, E. R. 1971. Can. J. Genet. and Cytol. 480-483.
10	Common Wheat	1AS		Exchange	;+2	R-MS	RL6004		Dyck, P. L. and Johnson, R. 1983. Can. J. Plant Pathol. 5: 229-234.
11	Common Wheat	2A		Hussar	2	MR	RL6053		Dyck, P. L. et al. 1966. Can. J. Genet. and Cytol. 8:665-671
12	Common Wheat	4BS		Exchange	;1-		RL6011		Dyck, P. L. et al. 1966. Can. J. Genet. and Cytol. 8:665-671
13	Common Wheat	2BS	Ne2m, Lr23	Frontana	;1		RL6001	adult plant resistance	Dyck, P. L. and Samborski, D. J. 1970. Can. J. Genet. and Cytol. 12:689-694
14a	Yaroslav emmer	7BL		Selkirk	X	MS	RL6013	adult plant resistance	Dyck, P. L. and Samborski, D. J. 1970. Can. J. Genet. and Cytol. 12:689-694
14b	Common Wheat	7BL		Maria Escobar	X	MS	RL6006		Luig, N.H. and McIntosh, R.A. 1968. Can. J. Genet. and Cytol. 10:99-105
15	Common Wheat	2DS	Lr2, Sr6	W1483	;C	R	RL6052		Dyck, P. L. and Samborski, D.J. 1968. Proc 3rd Int Wheat Genet Symp, pp 245-250
16	Common Wheat	2BS	Sr23	Exchange	,1 N	MS-MR	RL6005		Dyck, P. L. and Samborski, D.J. 1968. Proc 3rd Int Wheat Genet Symp, pp 245-250
17a	Common Wheat	2AS	Lr37, Sr38, Yr17	Klein Lucero	;1+,0,	MR-MS	RL6008		Dyck, P. L. and Samborski, D.J. 1968. Proc 3rd Int Wheat Genet Symp, pp 245-250
17b	Common Wheat	2AS	Lr37, Sr38, Yr17	Harrier					Dyck, P. L. and Samborski, D.J. 1968. Proc 3rd Int Wheat Genet Symp, pp 245-250
18	T. timopheevi	5BL	Sr25	Africa 43	2+2-	MS	RL6009		Sharma, D. and Knott, D.R. 1966. Can. J. Genet. and Cytol. 8:137-143
19	Thinopyrum ponticum	7DL		Thinopyrum ponticum	0;	R	RL6040		Browder, L.E. 1972. Crop Sci 12:705-706
20	Common Wheat	7AL	Pm1, S15, Sr22	Timmo	0;	R	RL6092		Rowland, G.G. 1974. Can. J. Genet. and Cytol. 16:137-144
21	T. tauschii	1DL		T. tauschii	0,,12-	I	RL6043		Rowland, G.G. 1974. Can. J. Genet. and Cytol. 16:137-144
22a	T. tauschii	2DS	Tg, W2	T. tauschii	-	MR	RL6044	adult plant resistance	Dyck, P. L. 1979. Can. J. Plant Sci. 59:499-501
22b	Common Wheat	2DS	Tg, W2	Thatcher	-	R	Thatcher	adult plant resistance	McIntosh, R.A. 1975. Aust J. Biol. Sci. 28:201-211
23	Durum Wheat	2BS	Lr13, Sr9	Gabo	1;, 23	MR,MS	RL 6012	test at 25 C	Browder, L.E. 1973. Crop Sci. 13:203-206
24	Thinopyrum ponticum	3DL	Sr24	Agent	0;	R	RL6064		Driscoll, C.J. and Anderson, L.M. 1967. Can. J. Genet. and Cytol. 9:375-380
25	Secale cereale	4AB	Pm7	Transec	,N	I	RL6084		Singh, R.P. et al. 1990. Theor. Appl. Genet. 80:609-616
26	Secale cereale	1BL	Sr31, Yr9	St-1-25	0,,;1	MR	RL6078		Singh, R.P. and McIntosh, R.A. 1984. Can. J. Genet. and Cytol. 26:736-742
27	Common Wheat	3BS	Sr2	Gatcher	X-	MR	Gatcher		McIntosh, R.A. 1982. Z. Pflanzenzuchung 89:295-306
28	A. speltoides	4AL		C-77-1	0;	I	RL6079		Sears, E.R. 1973. Proc. 4th Intl. Wheat Genet. Symp. pp.191-199
29	Thinopyrum ponticum	7DS		CS7D-Ag#11	,1 N	R	RL6080		Dyck, P. L. and Kerber, E.R. 1981. Can. J. Genet. and Cytol. 23:405-409
30	Common Wheat	4BL		Terenzio	123	R	RL6049		Singh, R.P. and McIntosh, R.A. 1984. Can. J. Genet. and Cytol. 26:736-742
31	Common Wheat	4BS		Gatcher	X-	MR	Gatcher		Kerber, E.R. 1987. Crop Sci. 27:204-206
32	T. tauschii	3D		T. tauschii	;1+		RL6086		Dyck, P. L. 1987. Genome 29:463-466
33	Common Wheat	1BL	Lr26	PIS8458	1	MR	RL6057		Dyck, P. L. 1987. Genome 29:467-469
34	Common Wheat	7D	Yr18, BdV1	PIS8548	12C	MR-MS	RL6058	test at 10 C	Kerber, E.R. and Dyck, P. L. 1990. Genome 33: 530-537.
35	A. speltoides	2B	Sr32?	A. speltoides	-	?	RL5711	adult plant resistance, linked to stem rust resistance	Dvorak, J. and Knott, D.R. 1990. Genome 33:892-897
36	A. speltoides	6BS		A. speltoides	01N	?	ER84018	test at 18 C	Bariana, H. S. and McIntosh, R. A. 1993. Genome 36: 476-482
37	A. ventricosa	2AS	Sr38, Yr17	VPM	12Y	I	RL6081		Friebe, B. et al. 1992. Theoretical and Applied Genetics 83: 775-782.
38	Thinopyrum intermedium	2AL		Thinopyrum intermedium	0;	?	RL6097		
39*	T. tauschii	2DS		T. tauschii	12=	?	KS86WGRC02		
40*	T. tauschii	1D		T. tauschii	2-	?	KS89WGRC07		
41	T. tauschii	2DS		T. tauschii	;	?	KS90WGRC10		Cox, T.S. et al. 1994. Crop Sci. 34:339-343
42	T. tauschii	1D		T. tauschii	;1		WGRC11		Cox, T.S. et al. 1994. Crop Sci. 34:339-343
43*	T. tauschii	1D +		T. tauschii	;1+		WGRC16		Cox, T.S. et al. 1994. Crop Sci. 34:339-343
44	T. spelta	1BL	to Lr33	T. aestivum spelta 7831	,;3C	MR	RL6147		Dyck, P. L. and Sykes, E.E. 1994. Can. J. Plant Sci. 74:231-233
45	Secale cereale	2AS		Secalis cereale	-	R	RL6144		McIntosh, R.A.
46	Common Wheat	1BL	Yr29	Pavon 76					Singh, R.P. and Huerta-Espino, J. 1998. Phytopathology 88:S82
47	A. speltoides	7AS		Pavon					Dubcovsky, J. et al. 1998. Crop Sci. 38:1655-1660
48	Common Wheat	??		CSP 44	S	;	CSP 44	adult plant resistance with Lr 34	Saini, R.G. et al. 2002. Euphytica 124: 365-370
49	Common Wheat	??		VL 404	S	;	VL 404	adult plant resistance with Lr 34	Saini, R.G. et al. 2002. Euphytica 124: 365-370
50	T. timopheevi	2BL		T. timopheevii subsp. armeniacum	0	MR	KS96WGRC36		Brown-Guedira, G.L. et al. 2003. Phytopathology 93:784-789
51	A. speltoides	1S/1B		A. speltoides	;				Helguera, M. 2005. Crop Sci. 45:728-734
52	Common Wheat	5BS		T. dicoccoides	;	R	RL6107		Hieber, C. et al. 2005. Theoretical and Applied Genetics. 110: 1453-1457.
53	T. dicoccoides	6BS		T. dicoccoides	;	R	AUS 91388		Marais, G. F. et al. 2005. Euphytica 143: 115-123.
54	A. kotschy	2DL		A. kotschy	;	R	S14		Marais et al. 2005. Plant Breeding 124: 538-541.
55	E. trachycaulus	1B		E. trachycaulus	;	R	KS04WGRC45		

* Lr39 = Lr41; Lr40 = Lr21; Lr43 is not a unique gene, germplasm line had Lr21 and Lr39.

Temporary designations

19d		Thinopyrum distichum							
B		Brevit		2,;	?		RL6051		Marais, G.F.
Exch		Exchange		?	?		RL6014		Unpublished
HeIV		Regina							Unpublished
I		CSP 44							Bartos, P. Personal Communication (AWN 40:95)
J		CSP 44							Shiwani and Saini, R.G. 1994. Genome 37:436-439
K		Oxley							"
L		CPAN 1235							"
LC		Little Club		1C	?		Little Club		"
LrA	2Ds			0;			RL5683		
LrAPR		KS91WGRC12, (Century/T. tauschii TA2451)							Kloppers, F.J. and Pretorius, Z.A. 1996. Proc. 9th Eur. Medit. Cereal Rusts Powdery Mildew Conf.
LrB	5D	T. tauschii		;1			RL5688		Innes, R.L. 1994. Genome 37:813-822
LrC		T. tauschii		2	R		RL5782-1		Innes, R.L. 1994. Genome 37:813-822
LrD		T. tauschii		0;			RL5788		"
Lrv		G-516 [Favorit/(Ae. variabilis) T. pergrinum]							"
									Ittu, M. et al. 1996. Proc. 9th Eur. Medit. Cereal Rusts Powdery Mildew Conf.

M		CPan1235					adult plant resistance	Shiwani and Saini, R.G. 1994. Genome 37:436-439
M		Trorysa					Bartos, P. Personal Communication (AWN 40:95)	
Mo		Morocco	0	?	Morocco	recessive	Ali, I. et al. 1994. Plant Disease 78:383-384	
N		VL 404				adult plant resistance	Shiwani and Saini, R.G. 1994. Genome 37:436-439	
O		VL 404				adult plant resistance	"	
T3		Terenizo	-		S-MS	TcLrT3	Dyck, P.L.	
Tm	6A	T. monococcum	0;			Ks92WGRC23	Hussian T. Personal Communication	
Tr		T. triunciale					Aghae-Sarbarreh , M. et al. 2001. Plant Breeding 120:259-261	
Trp-1		Torepi	S	R			Barcellos, A.L. 1994. PhD Thesis, Rio Grande Sul Federal Univ, Brazil	
Trp-2		Torepi	S	R			"	